

# I PERCEIVE THE UNIVERSE AS A SINGLE EQUATION:

ALL OBSERVABLE MATTER OF THE UNIVERSE  
AND MISSING MASS AND DARK ENERGY

$$|U\rangle_{\alpha}^* = |Vacuum\rangle_{\alpha}^{Vac} \otimes \left[ \bigotimes_{J=1}^{\infty} |S_J\rangle_{\alpha} \right]$$

THE STATE OF  
THE UNIVERSE\*

THE STATE OF THE  
'EMPTY' SPACE<sup>Vac</sup>

## AND IT IS SO SIMPLE !

**SCIENTIFIC  
AMERICAN**  
Established 1845

**SCOTT MATHESON HITCHCOCK'S  
LIFE PLAN STARTED HERE  
SEPTEMBER 15, 1953 -  
COSMIC COINCIDENCE?**

CONTENTS FOR SEPTEMBER, 1953

VOL. 189, NO. 3

# SCIENTIFIC AMERICAN

### ARTICLES

#### TIME

#### FUNDAMENTAL QUESTIONS IN SCIENCE

by Warren Weaver

As introduction to a special issue devoted to the basic questions of science and by reflection showing the true nature of a free science. 47

#### FEYNMAN CLOCKS

#### WHAT IS MATTER?

by Erwin Schrödinger

How matter can be both discrete particles and continuous wave patterns of energy is a great dilemma and a fundamental question in science. 57

#### NUCLEAR PHOTONICS

#### WHAT HOLDS THE NUCLEUS TOGETHER?

by Hans A. Bethe

The forces that bind the nuclei of atoms together do not conform to any forces we know. This question is a vital part of the one above. 58

#### COSMIC FLUX E.D.E.s

#### WHERE DO COSMIC RAYS COME FROM?

by Bruno Rossi

These high-energy particles may come from the sun, stars or galactic nebulae. A solution would tell in the composition of the universe. 64

#### HUBBLE CONSTANT

#### WHY ARE GALAXIES SPIRAL?

by Cecilia H. Payne-Gaposchkin

This question holds nothing less than an answer to the evolution of the cosmos. Much has been learned about galaxies, but not enough. 89

#### DNA DIRECTED FIVE WELL

#### HOW IS A PROTEIN MADE?

by K. U. Lindstrom-Lang

Somewhere in the process by which living cells put together varied, complex protein molecules is the secret of the synthesis of protoplasm. 100

#### 3 FOLD FORUS

#### HOW DO CELLS DIFFERENTIATE?

by C. H. Waddington

Genetics and embryology are converging upon the old question of how a tiny blob of fertilized egg becomes a man-body, heart and brain. 106

#### 1-COMPUTER

#### WHAT IS MEMORY?

by Ralph W. Gerard

In this faculty, the basis of sentient existence and all civilization, lies the key to the operations and malfunctions of human brain and mind. 118

#### HANS REICHENBACH

#### WHAT IS PROBABILITY?

by Rudolf Carnap

The laws of inductive probability are basic to judging the hypotheses by which science advances. How far can they be clarified and used? 128

### DEPARTMENTS

#### LETTERS

50 AND 100 YEARS AGO

THE AUTHORS

SCIENCE AND THE CITIZEN

BOOKS

THE AMATEUR SCIENTIST

BIBLIOGRAPHY

#### CYCLOTRON

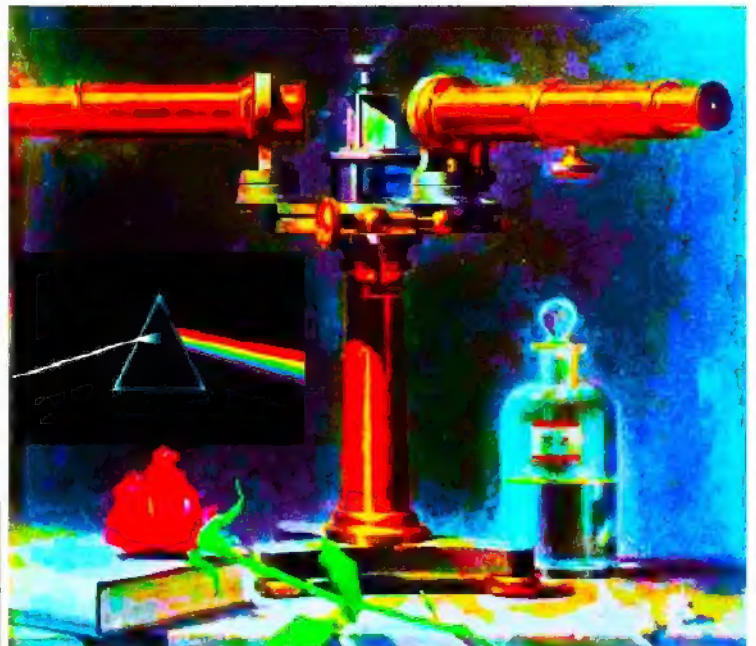
SCOTT MATHESON HITCHCOCK'S TRIP BEGAN HERE

"I PERCEIVE THE UNIVERSE  
AS A SINGLE EQUATION:

$$|U\rangle_{\alpha}^* = |Vacuum\rangle_{\alpha}^{Vac} \otimes \left[ \bigotimes_{J=1}^{\infty} |S_J\rangle_{\alpha} \right]$$

AND IT IS SO SIMPLE ! "

Revised Book "The Sil Brain" inside See Text The Next Generation



FUNDAMENTAL QUESTIONS IN SCIENCE  
...SET THE STAGE FOR MY ADVENTURES IN  
SCIENCE...THE BIG PICTURE!

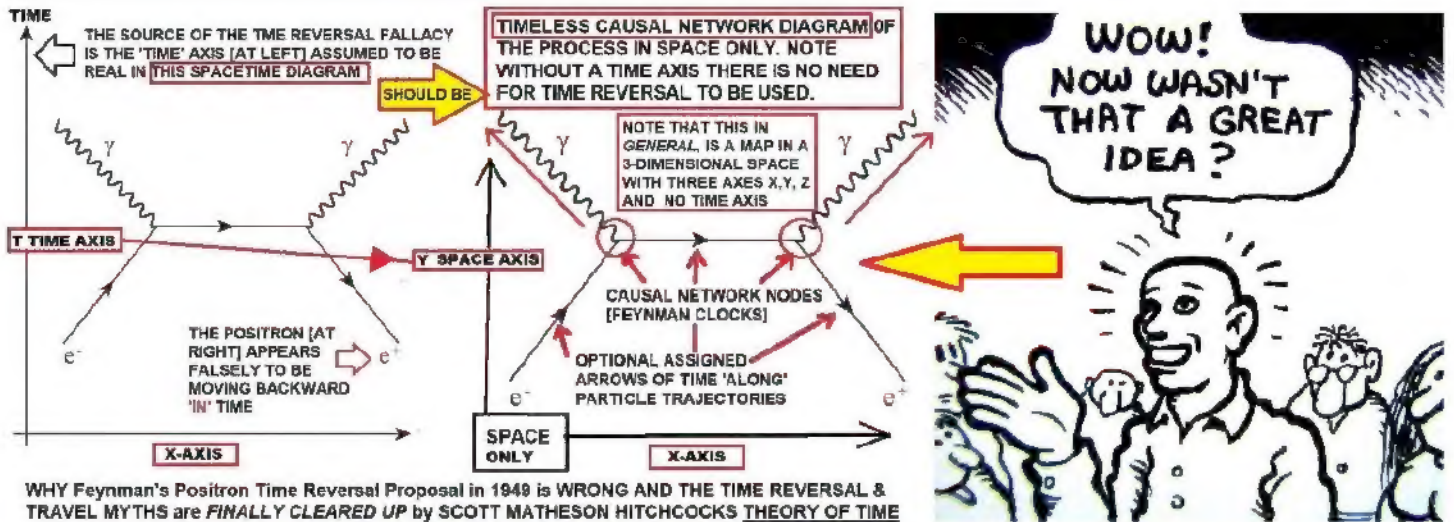
FIFTY CENTS

September 1953

"THE UNIVERSE STARTS WITH OUR BRAIN AND ENDS AT INFINITY"

- SCOTT MATHESON HITCHCOCK 11/25/2023





## SCOTT MATHESON HITCHCOCK'S NEW THEORY OF TIME

### ▶▶▶▶▶ A SYSTEMS APPROACH GIVES US THE SOLUTION TO THE PROBLEM OF TIME:

FOR SIMPLE SYSTEMS, ACCORDING TO THE PRINCIPLE OF OCCAM'S RAZOR THE SIMPLEST EXPLANATION FOR OBSERVED BEHAVIORS IS THE BEST CHOICE. BUT FOR COMPLEX SYSTEMS, A SYSTEMS APPROACH IS NECESSARY FOR UNDERSTANDING THE OBSERVED PHENOMENA.

CLEARLY SIMPLE EXPLANATIONS ABOUT THE FUNDAMENTAL NATURE IF TIME ARE NOT ADEQUATE, THIS IS WHY SCOTT REALIZED THAT TO UNDERSTAND THE NATURE OF TIME HIS SYSTEMS APPROACH WORKS TO CLARIFY ISSUES ABOUT THE FUNDAMENTAL PHYSICS AND NATURE OF TIME.

### ▶▶▶▶▶ THE PERCEPTION OF TIME IN THE 'NOW' OF OUR CONSCIOUSNESS:

ALL OUR BODIES SENSES SEND SIGNALS ORIGINATING IN OUR ENVIRONMENT OR OUR BODIES TO OUR BRAIN FOR PROCESSING INTO OUR PERCEPTION OF REALITY CURRENT WITH OUR SENSE OF 'NOW'.

THIS SUBJECTIVE 'NOW' OF OUR CONSCIOUSNESS IS LOCATED IN THE BRAIN. OUTSIDE THIS REGION OF THE BRAIN INCLUDING OTHER PARTS OF THE BRAIN AND BODY COULD BE THOUGHT OF AS 'NOT-NOW'.

SINCE THE NOW OF CONSCIOUSNESS IS ALL WE CAN EVER EXPERIENCE, IT IS ALSO THE LOCATION OF OUR SENSE OF TIME, SIMULTANEOUS WITH OUR CONSCIOUS THOUGHTS AND IMAGES OF THE 'EXTERNAL' OBSERVED REALITY.

ALL OF THE 'TIME DELAYED' INFORMATION COMING AS SENSE SIGNALS INTO OUR BRAIN FROM OUR BODIES AND OUR SENSE OBSERVATIONS ORIGINATES IN THE NOT-NOW UNIVERSE OUTSIDE OUR CONSCIOUSNESS. THIS IS THE REASON OUR CONSCIOUSNESS COMPOSES AN ONGOING PROGRESSION OF SEQUENTIAL IMAGES OF REALITY IN OUR CURRENT STATE OF NOW THAT ARE RELICS OF THE 'PAST' CONFIGURATION OF THE NOT-NOW UNIVERSE SURROUNDING OUR CONSCIOUS BRAIN.

THESE SENSE SIGNALS HAVE TRAVEL TIME DELAYS ALONG THE NEURAL PATHWAYS THAT WHEN ADDED TO THE TRAVEL TIMES FROM THE FROM THE SIGNAL ORIGINS TO SUBSEQUENT DETECTION BY THESE SENSE CELLS LEADING TO A NET TIME DELAY TO OUR BRAIN.

THE TOTAL TIME DELAY IS A MEASURE OF FACT THAT WHAT WE PERCEIVE AS 'NOW' IN OUR CONSCIOUSNESS IS REALLY THE 'PAST' NO MATTER HOW SHORT THE NET DELAY TIMES ARE.

ALL WE CAN REALLY SENSE ABOUT THE OBSERVABLE WORLD IS A 'PAST' CONFIGURATION - NO MATTER HOW 'IMMEDIATE' IT MAY SEEM. THE PAST OF THE NOT-NOW UNIVERSE IS ALREADY GONE BY THE TIME WE PERCEIVE IT IN OUR CONSCIOUSNESS.

IT IS THE INFORMATION CARRYING SIGNALS FROM THE NOT-NOW UNIVERSE THAT IS PROCESSED BY OUR NOW USING THE BRAINS T-COMPUTER TO STORE TIME LABELED MEMORIES FOR LATER CONSTRUCTIONS OF OUR MAPS OF THE PAST.

MEANWHILE, THE EXTERNAL OBJECTIVE UNIVERSE HAS EVOLVED INTO ITS 'PRESENT' CONFIGURATION. THE 'NOW' OF OUR CONSCIOUSNESS IS A RECORD OF THE NOT-NOW 'PAST'. OUR SUBJECTIVE NOW IS THE OBJECTIVE PAST OF THE NOT-NOW UNIVERSE.

FORTUNATELY THE EXTERNAL WORLD DOESN'T GENERALLY CHANGE MUCH DURING THE SHORT TIME WE TAKE TO FORMULATE A PICTURE IN OUR CONSCIOUSNESS OF PERCEIVED 'REALITY'. THIS CREATES THE ILLUSION OF CONTINUITY OF THE OBSERVED WORLD IN OUR MINDS MUCH LIKE SUCCESSIVE FRAMES IN A MOVIE OR ON A COMPUTER MONITOR.

▶▶▶ THEREFORE WE ARE ALWAYS LIVING IN OUR SUBJECTIVE CONSCIOUS NOW BASED ON THE NOT-NOW PAST STATE OF THE OBJECTIVE 'EXTERNAL' OBSERVABLE UNIVERSE, EVEN IF THE NOT-NOW PAST ONLY OCCURRED MILLISECONDS AGO.

**THE TIME IS 'NOW' AND 'NOW' IS THE TIME!**